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**United States Patent** [19]

Civerchia et al.

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[54] **METHOD FOR LOCATING ON A CORNEA AN ARTIFICIAL LENS FABRICATED FROM A COLLAGEN-HYDROGEL FOR PROMOTING EPITHELIAL CELL GROWTH AND REGENERATION OF THE STROMA**

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**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 511,847, Apr. 6, 1990, Pat. No. 4,994,081, which is a continuation of Ser. No. 920,070, Oct. 16, 1986, abandoned.

[51] **Int. Cl.:** ..... A61F 2/14; A61F 9/00

[52] **U.S. Cl.:** ..... 623/5; 606/107; 606/166

[58] **Field of Search** ..... 623/4-6; 606/107, 166; 351/160 R, 160 H

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[57] **ABSTRACT**

A method for locating on a cornea an artificial lens fabricated from a collagen-hydrogel for promoting epithelial cell growth and regeneration of the stroma is shown. The method provides for affixing an artificial lens to the Bowman's membrane and the lens, during the healing process, promotes and supports epithelial cell growth enabling corneal epithelium of the cornea of an eye to attach to and cover the anterior surface of the lens implanting the same and to regenerate the stroma which grows over the edge of and attaches to the optical lens. Laid down in the layers of the regenerated stroma are new keratocytes and collagen fibral produced from keratocytes. The collagen-hydrogel is a hydrogel polymer formed by the free radical polymerization of a hydrophilic monomer solution gelled and crosslinked in the presence of an aqueous stock solution of collagen to form a three dimensional polymeric meshwork for anchoring collagen. The collagen-hydrogel material has a ratio by weight of collagen-to-hydrogel in the range of about 0.6-to-1000 and less than 0.6-to-1000 but at a level wherein sufficient collagen is present by weight to at least one of promote epithelial cell growth and regeneration of the stroma to produce keratocytes including collagen fibral growth. The collagen-hydrogel material or an artificial lens or contact lens produced therefrom can include a epithelial growth enhancer to promote epithelial cell growth during the healing process.

**10 Claims, 3 Drawing Sheets**

